

CLAIMS

1. A method of fabricating a semiconductor device comprising the steps of:

(a) forming an oxidation prevention film on a
5 circuit formation surface of a semiconductor substrate;

(b) forming a trench having a desired depth at a predetermined position of the circuit formation surface of said semiconductor substrate;

(c) oxidizing said trench portion formed in
10 said semiconductor substrate;

(d) burying a buried insulating film into said trench so oxidized;

(e) removing said buried insulating film formed on said oxidation prevention film; and

15 (f) removing said oxidation prevention film formed on the circuit formation surface of said circuit substrate.

2. A method of fabricating a semiconductor device comprising the steps of:

20 (a) forming an oxidation prevention film on a circuit formation surface of a semiconductor substrate;

(b) forming shallow trenches having a radius of curvature at corners in a desired position of the circuit formation surface of said semiconductor
25 substrate;

(c) forming a trench having a predetermined depth to said shallow trenches having a radius of curvature so formed;

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(d) oxidizing said trench portions formed in said semiconductor substrate;

(e) burying a buried insulating film into said trenches so oxidized;

5 (f) removing said buried insulating film formed on said oxidation prevention film; and

(g) removing said oxidation prevention film formed on the circuit formation surface of said semiconductor substrate.

10 3. A method of fabricating a semiconductor device according to claim 2, wherein said step for forming shallow trenches is carried out by isotropic etching and said step for forming a trenches having a predetermined depth is carried out by anisotropic etching.

15 4. A method of fabricating a semiconductor device comprising the steps of:

(a) forming an oxidation prevention film on a circuit formation surface of a semiconductor substrate;

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20 (b) forming trenches having a predetermined depth at desired positions of the circuit formation surface of said semiconductor substrate;

(c) oxidizing said trench portions formed in said semiconductor substrate;

25 (d) burying a buried insulating film into said trenches so oxidized;

(e) removing said buried insulating film formed on said oxidation prevention film;

(f) oxidizing said semiconductor substrate

after said buried insulating film formed on said oxidation prevention film is removed; and

5 (g) removing said oxidation prevention film formed on the circuit formation surface of said semiconductor substrate.

5. A method of fabricating a semiconductor substrate comprising the steps of:

(a) forming an oxidation prevention film on a circuit formation surface of a semiconductor;

10 (b) forming shallow trenches having a radius of curvature at corners in desired positions of the circuit formation surface of said semiconductor substrate;

15 (c) forming trenches having a predetermined depth in said shallow trenches having a radius of curvature;

(d) oxidizing said trench portions formed in said semiconductor substrate;

20 (e) burying a buried insulation film into said trenches so oxidized;

(f) removing said buried insulating film formed on said oxidation prevention film;

(g) oxidizing said semiconductor substrate after said buried insulating film formed on said oxidation prevention film is removed; and

(h) removing said oxidation prevention film formed on the circuit formation surface of said semiconductor substrat .

6. A method of fabricating a semiconductor device according to claim 5, wherein said step for forming shallow trenches is carried out by isotropic etching and said step for forming a trenches having a predetermined depth is carried out by anisotropic etching.

7. A semiconductor device of the type wherein a device isolation oxide film structure formed on a circuit formation surface of a semiconductor substrate is a trench isolation structure, characterized in that an an angle θ of a trench, which constitutes said trench isolation structure with the circuit formation surface of said semiconductor substrate, in a depth-wise direction with respect to the side surface of said semiconductor substrate is within the range of $90^\circ < \theta < 180^\circ$.

8. A semiconductor device of the type wherein a device isolation oxide film structure formed on a circuit formation surface of a semiconductor substrate is a trench isolation structure, characterized in that an angle θ of a trench, which constitutes said trench isolation structure with the circuit formation surface of said semiconductor substrate, in a depth-wise direction with respect to the side surface of said semiconductor substrate is within the range of $90^\circ < \theta < 180^\circ$, and a silicon oxide exists inside said trench.

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F1
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A1

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B1

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C5

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D5